IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Fan, et al.

Serial No.:	10/725,378	**Group Art Unit**:	2129
Filed:	December 3, 2003	**Examiner**:	Coughlan, P. D.
For:	SYSTEM AND METHOD FOR SCALABLE COST-SENSITIVE LEARNING		

Commissioner of Patents
Alexandria, VA 22313-1450

APPELLANTS' BRIEF ON APPEAL

Sir:

Appellants respectfully appeal the rejection of claims 1-33 in the Office Action dated February 15, 2007. A Notice of Appeal was timely filed on June 15, 2007.

I. REAL PARTY IN INTEREST

The real party in interest is International Business Machines Corporation, assignee of 100% interest of the above-referenced patent application.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, Appellants' legal representative or Assignee which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-33 stand rejected under 35 U.S.C. §101 as allegedly directed to non-statutory subject matter. Claims 1-33 stand rejected under 35 U.S.C. §102(a) as anticipated by the inventors' IEEE presentation for a conference dated December 9, 2002, wherein some aspects of the present invention were published albeit within one year of the filing of the present application.

Both rejections are being appealed.

IV. STATUS OF AMENDMENTS

An Amendment Under 37 CFR §1.116 was filed on April 16, 2007, in an attempt to address the statutory subject matter rejection, but was not entered because the Examiner considered that a new issue was raised. Therefore, the version of the claims in the Appendix reflects the original claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention, as exemplarily defined in independent claim 1, is directed to a method of processing an inductive learning model for a dataset of examples. The dataset is divided into a plurality of subsets of data. An estimated learning model for the dataset is then developed by developing a learning model for a first subset of the plurality of subsets.

Conventional methods, as described at line 21 of page 3 through line 6 of page 4, of learning model methods for a database require that the entire database be evaluated before the effects of hypothetical parameters for a test model are known. This process can take many hours (or days) and be costly, so that it can be prohibitive to spend so much effort in the development of an optimal model to perform the intended task.

In contrast, the present invention provides a method to develop an inductive learning model in much shorter time, including an estimate of the accuracy of the model as currently developed and an estimated cost to develop a complete model of the entire database.

Bases in the specification for the independent claims:

1. (Rejected) A method of processing an inductive learning model for a dataset of examples (Figure 1), said method comprising:

dividing said dataset into a plurality of subsets of data (Figure 1, step 101; lines 10-22 of page 1); and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said plurality of subsets (Figure 1, step 102; lines 9-13 of page 2).

8. (Rejected) An apparatus for processing an inductive learning model for a dataset of examples (Figure 14), said apparatus comprising:

a database divider for dividing said dataset into N subsets of data (1403 in Figure 14; lines 10-22 of page 1); and

a base classifier calculator for developing a learning model for data in a first subset of said N subsets (1404 in Figure 14; lines 9-13 of page 2).

11. (Rejected) A system to process an inductive learning model for a dataset of example data (Figures 12 and 14), said system comprising one or more of:

a memory containing one or more of a plurality of segments of said example data, wherein each said segment of example data comprises data for calculating a base classifier for an ensemble model of said dataset (see 1402 of Figure 14);

a base classifier calculator for developing a learning model for data in one of said N segments (1404 of Figure 14);

an ensemble calculator for progressively developing an ensemble model of said database of examples by successively integrating a base classifier from successive ones of said N segments (1405 of Figure 14);

a memory interface to retrieve data from said database and to store data as said inductive learning model is progressively developed (1402 of Figure 14); and

a graphic user interface to allow a user to at least one of enter parameters, to control the progressive development of said ensemble model, and at least one of display and printout results of said progressive development (1401 of Figure 14).

12. (Rejected) A method of providing a service (lines 4-23 of page 37), said method comprising at least one of:

providing a database of example data to be used to process an inductive learning model for said example data, wherein said inductive learning model is derivable by dividing said example data into N segments and using at least one of said N segments of example data to derive a base classifier model (lines 10-22 of page 1; lines 18-19 of page 37);

receiving said database of example data and executing said method of deriving said inductive learning model;

providing an inductive learning model as derived;

executing an application of an inductive learning model as derived; and

receiving a result of said executing said application.

13. (Rejected) A method of deploying computing infrastructure, comprising integrating computer-readable code into a computing system, wherein the code in combination with the computing system is capable of processing an inductive learning model for a dataset of examples by:

dividing said dataset into N subsets of data (step 101 of Figure 1; lines 10-22 of page 1); and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets (step 102 of Figure 1; lines 9-13 of page 2).

14. (Rejected) A signal-bearing medium (1300 of Figure 13) tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of processing an inductive learning model for a dataset of examples (Figure 1), said method comprising:

dividing said dataset into N subsets of data (step 101 of Figure 1; lines 10-22 of page 1); and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets (step 102 of Figure 1; lines 9-13 of page 2).

20. (Rejected) A method of at least one of increasing a speed of development of a learning model for a dataset of examples and increasing an accuracy of said learning model (Figure 1), said method comprising:

dividing said dataset into N subsets of data (step 101 of Figure 1; lines 10-22 of page 1); and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets (step 102 of Figure 1; lines 9-13 of page 2).

25. (Rejected) A method of developing a predictive model, said method comprising:

for a dataset comprising a plurality of elements, each said element comprising a feature vector, said dataset further comprising a true class label for at least a portion of said plurality of elements, said true class labels allowing said dataset to be characterized as having a plurality of classes, dividing at least a part of said portion of said plurality of elements having said true class label into N segments of elements (step 101 of Figure 1; lines 10-22 of page 1); and

learning a model for elements in at least one of said N segments, as an estimate for a model for all of said dataset (steps 102-106 of Figure 1; lines 9-13 of page 2).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants present the following grounds for review by the Board of Patent Appeals and Interferences:

GROUND 1: THE NON-STATUTORY SUBJECT MATTER REJECTION

Whether the rejection under 35 U.S.C. § 101 can be maintained for claims 1-33, considering that the present invention inherently provides a result that is useful, concrete and tangible and there is no mathematical algorithm being described or claimed, let alone preempted.

GROUND 2: THE ANTICIPATION REJECTION

Whether the rejection for claims 1-33 based on Appellants' own publication can be maintained when the publication was less than one year before the filing of the present application and when the present inventors have submitted a Rule 132 affidavit declaring themselves to be the true inventors, thereby declaring that the two students listed on the publication did not contribute to the conception or reduction to practice of the present invention and are not co-inventors.

VII. ARGUMENTS

GROUND #1: THE NON-STATUTORY SUBJECT MATTER REJECTION

1. THE EXAMINER'S POSITION ON THE STATUTORY SUBJECT MATTER REJECTION

In the Office Action mailed on February 15, 2007, the Examiner states, beginning on page 2:

"Claims 1-33 are rejected under 35 U.S.C. 101 for nonstatutory subject matter. The computer system must set forth a practical application of that § 101 judicial exception to produce a real-world result. Benson 409 U.S. at 71-72, 175 USPQ at 676-77. The invention is ineligible because it has not been limited to a substantial practical application. An inductive learning method by itself has no practical application. The result has to be a practical application. Please see

the interim guidelines for examination of patent applications for patent subject matter eligibility published November 22, 2005 in the official gazette.

In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete." If the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101. Phrases such as 'inductive learning model', 'processing an inductive learning model' and 'a system to process an inductive learning model' all generate a inductive learning model but there is no stated real world practical application for such a device.

The invention must be for a practical application and either:

1) specify transforming (physical thing) or

2) have the FINAL RESULT (not the steps) achieve or produce a useful (specific, substantial, AND credible), concrete (substantially repeatable/ non-unpredictable), AND tangible (real world/ non-abstract) result.

A claim that is so broad that it reads on both statutory and non-statutory subject matter, must be amended, and if the specification discloses a practical application but the claim is broader than the disclosure such that it does not require the practical application, then the claim must be amended.

Claims that recites a method or system that computes an inductive algorithm which solely calculates a mathematical response without a purpose or function is not statutory."

In the Response to Arguments section, the Examiner further states in paragraph 6 beginning on page 16 of the Office Action:

"*Applicant states that the invention provides `reduces the amount of time and cost to develop a learning model for a large database' is a practical application. Examiner agrees. The problem is this is not stated within the independent claims. If amended claims were to incorporate something similar to 'reduces the amount of time and cost to develop a learning model for a large database', this seems it would overcome the 35 U.S.C. §101 rejection.*"

In the Advisory Action mailed on May 3, 2007, the Examiner indicated that the rejection under 35 USC §101 was withdrawn, based on the disclosure that the present invention had been demonstrated in the practical applications of campaign letter distributions and credit card fraud detection.

However, in the Advisory Action mailed on May 30, 2007, the Examiner indicated that the 35 USC §101 would be reinstated if an RCE were to be filed, since the Appellants had argued that there were other practical applications both known and unknown.

Therefore, it is uncertain on the record the status of the statutory subject matter rejection in the instant rejection. It is also uncertain on the record what standard is being used by the USPTO for statutory subject matter.

2. APPELLANTS' POSITION ON THE STATUTORY SUBJECT MATTER REJECTION

Appellants remain uncertain what exactly the Examiner is attempting to assert in this rejection, since the Examiner concedes that the present invention does indeed reduce time and/or cost to develop a learning model for a large database and is, therefore, a practical application. Thus, Appellants understand the Examiner as having conceded that the present invention does indeed satisfy this requirement of statutory subject matter.

However, the Examiner then strangely added a procedural requirement, alleging that method claims must expressly articulate the practical results before the invention can be considered as directed toward statutory subject matter.

Appellants respectfully disagree, since statutory subject matter is a characteristic of the invention as a whole and is not dependent upon using special wording in the claims to describe the practical result. That is, Appellants submit that merely adding a description of the practical result to the claims, when the steps described in the claims inherently achieve this practical result, does not mysteriously convert the invention from non-statutory subject matter into statutory subject matter.

No case law has ever made such holding, nor do the new Guidelines add a procedural requirement for statutory subject matter that the claims must artificially articulate the tangible (i.e., "real world") result of the invention or offer any guidelines as to the specific wording to be used to meet such procedural requirement. Appellants understand that the test for statutory subject matter for computer method claims remains whether the claimed invention as a whole (e.g., whether the invention as implemented) provides a real world result, not whether the claims artificially recite the tangible result.

It is noted that Appellants did attempt to submit an amendment that was understood as addressing this particular art unit's understanding of the requirements for statutory subject matter, but the Examiner considered that a new issue was raised and the amendment was not entered.

It is further noted that, if it is the position of the USPTO that specific wording choice somehow distinguishes statutory subject matter, then the USPTO has the clear burden of publishing those specific claim wordings that will satisfy their understanding of statutory subject matter, rather than leaving it up to applicants to keep trying different wording until finally discovering each Examiner's personal preference for wording.

It is further noted that, relative to the reinstallation of the rejection based upon Appellants' position that there are applications both known and unknown, Appellants are not aware of any holding that defines statutory subject matter as related to the issue of specifically defining the claims to specific applications.

Appellants believe that the present invention, because it shortens the training period for databases, inherently meets the threshold requirement of statutory subject matter by reason that there is no mathematical algorithm being claimed and because the method is clearly useful, concrete and tangible. That is, a database of information is clearly "real-world", as the USPTO's use of its electronic database confirms, and the shortening of a training period involving a database would, therefore, inherently be a real-world application.

Appellants also believe that attempting to compel Appellants to limit the method of the invention to the exemplary examples described in the disclosure defeats the entire purpose of obtaining a patent on the method and is not an issue related to statutory subject matter.

Therefore, Appellants request that the Board clarify the USPTO position on statutory subject matter, both in general and relative to the present invention and the present claim language. It is also respectfully requested that the Board provide specific case citations in their analysis, since there are many 101 rejections currently circulating in the USPTO that are attempts to take wording out of context of the holdings or that provide paraphrasing that has no substantive meaning.

GROUND #2: THE ANTICIPATION OF THE CLAIMED INVENTION BY APPELLANTS' PREVIOUS PUBLISHED WORK

1. THE EXAMINER'S POSITION ON THE ANTICIPATION REJECTION

In the first Office Action mailed on August 31, 2006, the Examiner rejected claims 1-33 as anticipated by Appellants' publication "Progressive Modeling".

In the Request for Reconsideration Under 37 CFR §1.111, submitted on November 29, 2006, Appellants explained that this publication was Appellants' publication that occurred less than one year prior to filing the present application and, therefore, was disqualified as prior art against the application.

In the Response to Arguments section of the rejection currently of record, in paragraph 7, on page 18 of the Office Action mailed on February 15, 2007, the Examiner states:

"*The Examiner acknowledges the art is within the one year grace period of the filing date. The problem arises is that the inventive entity is not the same. Authors Shaw-hwa Lo and Salvatore Stolfo are not listed as inventors. Additionally both Shaw-hwa Lo and Salvatore Stolfo are affiliated with Columbia University and not International Business Machine. Therefore the art 'Progressive Modeling' is valid to use.*"

In the Amendment Under 37 CFR §1.116 submitted on April 16, 2007, Appellants explained that the two student names were added to the publication for benefit of their academic experience and was not indicative of the status of either authorship or co-inventorship, as indicated by having the two students' names outside the IBM names and at the end of the listing of authors of the publication, as is standard procedure for listing students on such publications where the students do not contribute to the project to be considered as co-inventors or even authors of the publication. Appellant Fan submitted a Rule 132 declaration (see Evidence Appendix) describing that neither of the two students were co-inventors.

In the Advisory Action mailed on May 3, 2007, the Examiner indicated that the Rule 132 declaration was ineffective because only one inventor was represented and

because there were no words that the reference was not invented "by another" and imposed a Rule 105 requirement for additional information supporting the Appellants' position that they were the sole inventors.

In the Request for Reconsideration Under 37 CFR §1.116 filed on May 15, 2007, Appellants responded to the Rule 105 request for any prior art search information known to Appellants at the time of filing the application but declined to provide laboratory notes, and, instead, provided a second Rule 132 declaration (see Evidence Appendix) signed by two of the three co-inventors (the third co-inventor subsequently signed the declaration after returning from an illness, so the declaration was perfected on filing on June 15, 2007, of the declaration as executed by the third co-inventor). The second Rule 132 expressly states that the publication cited by the Examiner was not invented by another.

In the Advisory Action mailed on May 30, 2007, the Examiner maintained the Rule 105 requirement and disagreed with the Appellants' position on inventorship.

Thus, it appears that the Examiner seems to consider that the Appellants have failed to establish that they are sole inventors of the present invention and that Appellants have not responded to the Rule 105 requirement.

2. APPELLANT'S POSITION ON THE ANTICIPATION REJECTION

Appellants believe that perfecting the Rule 132 Declaration by submitting the third co-inventor's signed declaration removes the Appellants' publication as a prior art reference against the present application and that there is no additional duty to provide engineering notebooks or any other information required by the Examiner to support Appellants' declaration that the cited publication was not by another. Appellants did respond to the Examiner's Rule 105 requirement for providing any prior art search results by explaining that no prior art search had been done.

Therefore, Appellants believe that the filing of the second Rule 132 declaration disqualifies the cited publication as a prior art reference, thereby overcoming the anticipation rejection currently of record.

CONCLUSION

In view of the foregoing, Appellants submit that claims 1-33, all the claims presently pending in the application, are clearly enabled and patentably distinct from the prior art of record and in condition for allowance. Thus, the Board is respectfully requested to remove all rejections of claims 1-33.

Please charge any deficiencies and/or credit any overpayments necessary to enter this paper to Assignee's Deposit Account number 50-0510.

Respectfully submitted,

Dated: 08/15/07

Frederick E. Cooperrider
Reg. No. 36,769

McGinn Intellectual Property Law Group, PLLC.
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(703) 761-4100
Customer Number: 21254

VIII. CLAIMS APPENDIX

Claims, as originally filed:

1. (Rejected) A method of processing an inductive learning model for a dataset of examples, said method comprising:

dividing said dataset into a plurality of subsets of data; and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said plurality of subsets.

2. (Rejected) The method of claim 1, further comprising:

progressively forming an ensemble model of said dataset by sequentially developing a learning model for each of a successive one of said plurality of subsets, until a desired indication of termination has been reached.

3. (Rejected) The method of claim 1, further comprising:

developing at least one of a current accuracy and an estimated final accuracy, said current accuracy comprising an accuracy of said learning model for said first subset, said estimated final accuracy comprising an estimated accuracy of said estimated learning model for said dataset.

4. (Rejected) The method of claim 2, further comprising:

developing at least one of a current accuracy and an estimated final accuracy,

said current accuracy comprising an accuracy of said learning model for said subset being currently developed,

said estimated final accuracy comprising an estimated accuracy of said ensemble model of said dataset.

5. (Rejected) The method of claim 2, further comprising:

developing an estimated training time to complete development of said ensemble model.

6. (Rejected) The method of claim 3, wherein each said example in said dataset carries a benefit and said accuracy comprises an overall accuracy that reflects an estimated total amount of reward from said benefits.

7. (Rejected) The method of claim 6, wherein said benefit is not equal for all said examples, said learning comprising a cost-sensitive learning, and said accuracy comprises an overall accuracy that reflects an estimated total amount of reward from said benefits in units of money.

8. (Rejected) An apparatus for processing an inductive learning model for a dataset of examples, said apparatus comprising:

a database divider for dividing said dataset into N subsets of data; and

a base classifier calculator for developing a learning model for data in a first subset of said N subsets.

9. (Rejected) The apparatus of claim 8, further comprising:

an ensemble calculator for progressively developing an ensemble model of said database of examples by successively integrating a base classifier from successive subsets of said N subsets.

10. (Rejected) The apparatus of claim 9, further comprising:

a memory interface to retrieve data from said database and to store data as said inductive learning model is progressively developed; and

a graphic user interface to allow a user to selectively enter parameters, to control the progressive development of said ensemble model, and to view results of said progressive development.

11. (Rejected) A system to process an inductive learning model for a dataset of example data, said system comprising one or more of:

a memory containing one or more of a plurality of segments of said example data, wherein each said segment of example data comprises data for calculating a base classifier for an ensemble model of said dataset;

a base classifier calculator for developing a learning model for data in one of said N segments;

an ensemble calculator for progressively developing an ensemble model of said database of examples by successively integrating a base classifier from successive ones of said N segments;

a memory interface to retrieve data from said database and to store data as said inductive learning model is progressively developed; and

a graphic user interface to allow a user to at least one of enter parameters, to control the progressive development of said ensemble model, and at least one of display and printout results of said progressive development.

12. (Rejected) A method of providing a service, said method comprising at least one of:

providing a database of example data to be used to process an inductive learning model for said example data, wherein said inductive learning model is derivable by dividing said example data into N segments and using at least one of said N segments of example data to derive a base classifier model;

receiving said database of example data and executing said method of deriving said inductive learning model;

providing an inductive learning model as derived;

executing an application of an inductive learning model as derived; and

receiving a result of said executing said application.

13. (Rejected) A method of deploying computing infrastructure, comprising integrating computer-readable code into a computing system, wherein the code in combination with the computing system is capable of processing an inductive learning model for a dataset of examples by:

dividing said dataset into N subsets of data; and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets.

14. (Rejected) A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of processing an inductive learning model for a dataset of examples, said method comprising:

dividing said dataset into N subsets of data; and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets.

15. (Rejected) The signal-bearing medium of claim 14, said method further comprising:

progressively forming an ensemble model of said dataset by sequentially developing a learning model for each of a successive one of said N subsets, until a desired indication of termination has been reached.

16. (Rejected) The signal-bearing medium of claim 15, said method further comprising:

developing at least one of a current accuracy and an estimated final accuracy, said current accuracy comprising an accuracy of said learning model for said subset being currently developed,

said estimated final accuracy comprising an estimated accuracy of said ensemble model of said dataset.

17. (Rejected) The signal-bearing medium of claim 15, said method further comprising:

developing an estimated training time to complete development of said ensemble model.

18. (Rejected l) The signal-bearing medium of claim 16, wherein each said example in said dataset carries a benefit and said accuracy comprises an overall accuracy that reflects an estimated total amount of reward from said benefits.

19. (Rejected) The signal-bearing medium of claim 18, wherein said benefit is not equal for all said examples, said learning comprising a cost-sensitive learning, and said accuracy comprises an overall accuracy that reflects an estimated total amount of reward from said benefits in predetermined units.

20. (Rejected) A method of at least one of increasing a speed of development of a learning model for a dataset of examples and increasing an accuracy of said learning model, said method comprising:

dividing said dataset into N subsets of data; and

developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets.

21. (Rejected) The method of claim 20, further comprising:

calculating an estimated accuracy for said learning model.

22. (Rejected) The method of claim 20, further comprising:

calculating a remaining training time.

23. (Rejected) The method of claim 20, further comprising:

progressively, and stepwise, forming an ensemble model of said dataset by sequentially using additional said subsets to develop an additional learning model for said subset and incorporating each said additional learning model into an aggregate model to form said ensemble model, wherein said progressive and stepwise forming can be terminated prior to developing an additional learning model for all of said N subsets.

24. (Rejected) The method of claim 20, wherein said examples carry potentially different benefits, said method further comprising:

calculating an estimation of an accumulated benefit for said learning model.

25. (Rejected) A method of developing a predictive model, said method comprising:

for a dataset comprising a plurality of elements, each said element comprising a feature vector, said dataset further comprising a true class label for at least a portion of said plurality of elements, said true class labels allowing said dataset to be characterized as having a plurality of classes, dividing at least a part of said portion of said plurality of elements having said true class label into N segments of elements; and

learning a model for elements in at least one of said N segments, as an estimate for a model for all of said dataset.

26. (Rejected) The method of claim 25, further comprising:

using a second part of said portion of said plurality of elements having said true class label as a validation set for said model.

27. (Rejected) The method of claim 26, further comprising:

using said validation set to calculate a predicted accuracy for said model.

28. (Rejected) The method of claim 25, further comprising:

calculating an estimated training time for learning a model based on a remainder of said N segments.

29. (Rejected) The method of claim 25, wherein said elements are each associated with a benefit, said method further comprising:

establishing a benefit matrix associated with said plurality of classes, said benefit matrix defining a benefit for each said element in said dataset as applicable for each said class.

30. (Rejected) The method of claim 29, wherein said elements in said dataset can respectively have different benefit values, said method further comprising:

using a validation dataset to measure a validation of said model; and

calculating an aggregate benefit for said model, as based on said validation dataset.

31. (Rejected l) The method of claim 25, further comprising:

progressively developing an ensemble model by successively learning a model for elements in one of a remaining said N segments, wherein said progressively developing said ensemble model is terminable at any stage.

32. (Rejected) The method of claim 31, further comprising:

calculating at least one of an accuracy and a remaining training time for said ensemble model.

33. (Rejected) The method of claim 32, further comprising:

entering a threshold for at least one of said accuracy and said remaining training time; and

automatically terminating said progressively developing said ensemble model whenever said threshold is exceeded.

IX. EVIDENCE APPENDIX

1) **First Rule 132 Declaration filed on 04/16/07.**

2) **Second Rule 132 Declaration filed on 05/15/07, as executed by two co-inventors, and as filed on 06/15/07, as executed by the third co-inventor.**

X. RELATED PROCEEDINGS APPENDIX

(NONE)

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FAN et al.

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Filed: December 3, 2003 Examiner: P. Coughlan

For: SYSTEM AND METHOD FOR SCALABLE COST-SENSITIVE LEARNING

Honorable Commissioner of Patents
Alexandria, Virginia, 22313-1450

DECLARATION UNDER 37 C. F. R. §1.132

Sir:

Comes now the Declarant, Wei Fan, and states and avers the following:

(1) I am a co-inventor of claims 1-33 of the above-referenced patent application and a co-inventor of the subject matter described and claimed therein.

(2) I hereby declare that both Lo and Stolfo were not involved in any way with either the conception or reduction to practice of this patent application.

(3) I further declare that the names of Lo and Stolfo were added to the IEEE publication "Progressive Modeling" only as a courtesy for their academic record and that adding their names to this publication listing of authors was not intended in any way to signify them as co-inventors.

VERIFICATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature: _____
Wei Fan

Date: 04/16/2007

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Filed: December 3, 2003 Examiner: P. Coughlan

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Honorable Commissioner of Patents
Alexandria, Virginia, 22313-1450

DECLARATION UNDER 37 C. F. R. §1.132

Sir:

Comes now the Declarants, Wei Fan, Haixun Wang, and Philip S. Yu, and each states and avers the following:

(1) I am a co-inventor of claims 1-33 of the above-referenced patent application and a co-inventor of the subject matter described and claimed therein.

(2) I was present at IBM and working on the project of the above-referenced patent application during the time that Columbia University students Lo and Stolfo were associated as trainee students with my working unit.

(3) I hereby declare that both these above-identified students were trainees under the professional direction and supervision of the co-inventors identified below and on the Declaration submitted with the above-referenced patent application and did not contribute to the actual conception or reduction to practice of the claimed invention.

(4) I further declare that the names of these two students were added to the IEEE publication "Progressive Modeling" only as a courtesy to these students for their academic record and that adding their names to this publication listing of authors was not intended in any way to signify them as co-inventors of the claimed invention.

(5) Accordingly, I hereby declare that, to the extent that the above-identified publication at least partially describes the claimed invention, the conception and invention of the subject matter therein are derived solely from the co-inventors identified below and on the Declaration submitted with the above-referenced patent application.

(6) Therefore, I hereby declare that the invention described in claims 1-33 of the above-referenced patent application is not by another.

VERIFICATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature: _____ Date: 06/18/07
Wei Fan

Signature: _____ Date: _____
Haixun Wang

Signature: _____ Date: _____
Philip S. Yu

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(1) I am a co-inventor of claims 1-33 of the above-referenced patent application and a co-inventor of the subject matter described and claimed therein.

(2) I was present at IBM and working on the project of the above-referenced patent application during the time that Columbia University students Lo and Stolfo were associated as trainee students with my working unit.

(3) I hereby declare that both these above-identified students were trainees under the professional direction and supervision of the co-inventors identified below and on the Declaration submitted with the above-referenced patent application and did not contribute to the actual conception or reduction to practice of the claimed invention.

(4) I further declare that the names of these two students were added to the IEEE publication "Prog ressive Modeling" only as a courtesy to these students for their academic record and that adding their names to this publication listing of authors was not intended in any way to signify them as co-inventors of the claimed invention.

(5) Accordingly, I hereby declare that, to the extent that the above-identified publication at least partially describes the claimed invention, the conception and invention of the subject matter therein are derived solely from the co-inventors identified below and on the Declaration submitted with the above-referenced patent application.

(6) Therefore, I hereby declare that the invention described in claims 1-33 of the above-referenced patent application is not by another.

VERIFICATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature: _____ Date: _____
Wei Fan

Signature: _____ Date: 5/15/2007
Haixun Wang

Signature: _____ Date: 5/15/2007
Philip S. Yu